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THE IMPACT OF INTERNATIONAL TRADE ON LABOUR MARKETS. THE CASE OF OUTWARD PROCESSING TRAFFIC BETWEEN THE EUROPEAN UNION AND CENTRAL EASTERN EUROPEAN COUNTRIES

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Abstract

In this paper we are trying to evaluate the differential impact of Outward Processing Traffic (OPT) flows with respect to the final trade flows on the labour markets of EU countries. In particular, two EU countries are investigated, Germany and Italy, because of their relevance on total EU-CEEC OPT flows and because they embody two different models of outsourcing towards CEECs. The factor content of trade (FCT) analysis conducted at both levels of inter-industry trade and intra-industry trade signals a more relevant impact of OPT flows than final flows. In particular, results suggest that the labour market effects of intra-industry trade flows deriving from the vertical disintegration of production add significantly to the estimated factor market impact of trade.

JEL classification

F14, F15.

Keywords

intra-industry trade, EU-CEEC trade, vertical disintegration, quality differentiation, labour market effects of international trade.

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1. Introduction

The objective of the paper is to investigate the implications for labour markets of the on-going liberalisation process involving trade between EU countries and Central and Eastern European countries (CEEC), by an approach addressed to study vertical forms of integration in EU-CEEC trade. In particular, outward processing traffic (OPT) will be treated.

The choice to concentrate our attention on this particular form of trade (OPT) derives from the non complete satisfaction derived from the studies which have attempted to predict the future evolution of trade with Eastern European countries and its impact on European welfare (Collins and Rodrick, 1991; Wang and Winters, 1992; Hamilton and Winters, 1992; Baldwin, 1993). In these studies a clear definition of the pattern of trade of the CEE economies has not emerged (because of the present phase of transition in these countries), and consequently the estimates of the impact of trade are uncertain. Also the authors using general equilibrium models to estimate the effect of CEEC trade on EU economies have complained about a lack of strong results due to the models' inability to capture intra-sectoral adjustments (Gasiorek, Smith and Venables, 1994). In this regard, the recent book of A.Wood (1994) warns against the risk of understating the effects of trade on labour markets if product heterogeneity is not considered adequately (on this point see also Celi and Segnana 1997). Following Wood's suggestion, Celi and Smith (1999) have re-

cently offered a new treatment of the labour market effects of international trade, based on a model in which intra-industry trade is explained on differences in skill intensity associated with the quality differentiation of traded goods. The model is more consistent with stylised facts about the North-South trade than the traditional Heckscher-Ohlin model of inter-industry trade. Applying the model to trade between Italy and 'non-advanced countries' and inferring the factor content of intra-industry trade from the inter-sectoral relationship between the factor intensity and average unit values of exports, Celi and Smith find that the labour market effects of intra-industry trade add significantly to the estimated factor market impact of trade.

So heterogeneity in intra-industry trade is important. But not only in terms of the quality of final goods but also in terms of the disintegration of productive processes. Recently, Feenstra (1998) has mentioned the importance of outsourcing in the unskilled-adverse shift in labour demand occuring in advanced countries in recent years. Actually trade flows deriving from the vertical fragmentation of production on an international scale could have the same within-industry effect of technology on the displacement of demand for unskilled workers. But, usually economists assume that international trade has an impact on labour markets via between-industry adjustments, denying any complementarities between trade and technology that, on the contrary, are so evident in the recent dynamics of vertical disintegration arising in advanced countries.

OPT is a form of vertical integration in trade which is becoming the main channel of interdependence between EU countries and CEE countries (Corado, 1994). Therefore, if the study of EU-CEEC trade impact is carried out looking at forms of vertical integration like OPT, then a better assessment of the adjustment problem could be achieved. The standard theory of international trade (HOS approach) used by a number of authors to estimate the impact of trade on labour markets is naturally oriented to assume that each product traded is associated with a unique industry with a unique production process. This assumption is crucial to formulate estimates of the distributional effects of trade consistent with factor ratio variations (Stolper-Samuelson theorem). But, in reality, an industry may produce a good using processes which differ in their factor intensity. In addition, the particular production processes of an industry could be transferred abroad in order to exploit, for example, the availability of cheaper for-

eign labour. In this case, it is clear that the standard trade theory would form wrong estimates of the distributional effects of trade, by confusing the outsourcing with a change in production techniques.

HOS approach could hardly give a full account of the effect of trade on labour markets if vertical trade and processes of production delocation are acting. Therefore, looking explicitly at a specific case of vertical trade for which data are available - OPT between EU and CEEC - could contribute to a better understanding of the impact of trade on labour markets.

In this paper we are trying to evaluate the differential impact of OPT flows with respect to final flows on the labour markets of EU countries. In particular, two EU countries are investigated, Germany and Italy, because of their relevance on total EU-CEEC OPT flows and because they embody two different models of outsourcing towards CEECs. The factor content of trade (FCT) analysis conducted both at inter-industry trade (conventional procedure) and intra-industry trade (Celi and Smith methodology) signals a more relevant impact of OPT flows than final flows. In particular, results suggests that the labour market effects of intra-industry trade flows deriving from the vertical disintegration of production add significantly to the estimated factor market impact of trade.

The paper is structured in four sections. Section 2 offers a short overview of OPT in EU from which it is possible to extrapolate the reasons to focus the analysis on EU-CEEC trade. Section 3 first presents a short reconstruction of the debate on trade and job, where the relevance of vertical trade - in both senses of outsourcing and quality differentiation - to explain the unskilled-adverse shift in labour demand in advanced countries is emphasised. Then it provides an empirical application to test the differential impact of OPT flows with respect to final flows. The final section contains some concluding remarks.

2. An overview of OPT in EU countries

The Outward Processing Traffic (OPT) refers to trade flows associated with a particular form of sub-contracting carried out by EU

firms on international scale. The sub-contracting agreement involves a EU contractor who exports temporarily a commodity to be processed abroad by a sub-contractor and then re-imported. The contract provides that the ownership rights over the input supplied are retained by the contractor who is committed to collect his output after processing; the contractor also retains the right to market the final product or to process the product (reimported) further as necessary[1].

In comparison with a mere sub-contracting agreement, OPT benefits from a preferential trade regime in EU[2]. Thus the fact that OPT has to be declared to the custom authorities allows Eurostat to process data distinguishing different statistical regimes: 1) *exports for* and *imports after* outward processing, 2) *exports after* and *imports for* inward processing, 3) *normal* exports and imports[3]. The Eurostat-Comext data set provides information on OPT flows and final trade flows at a very high level of product disaggregation since 1988 for each EU reporting country. Although OPT data underestimate the extent of the vertical disintegration of production at international level, nevertheless they can offer a useful preliminary description of the tendencies associated with this phenomenon.

Table 1 reports a comparison between OPT flows and final flows with reference to Extra-EU trade of EU countries. Although the OPT flows still represent a small fraction of final flows, they grow at a faster pace. From 1989 to 1997 the OPT flows of the whole EU area have increased more than 160%, whereas final flows have augmented 63%. Only in three countries (Netherlands, Spain and Portugal) the rate of growh of final flows is higher than OPT flows. So, on the whole, OPT data referred to EU countries confirm the increasing importance of vertical flows in world trade as reported in several recent studies[4].

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1 In addition, the contractor maintains the right to carry out quality control and to reject the sub-contractor output on the basis of quality, timing of delivery and other contractual conditions.

2 For legal aspects of the OPT arrangement see Pellegrin (1995).

3 With regard to OPT flows, in the present context we are interested to flows at point 1, because the analysis focuses on the relocation of the production segments from EU countries to CEEC.

4 Hummels, Rapoport, Kei-Mu Yi (1998), Feenstra (1998). For a theoretical discussion on the insertion of vertical fragmentation in trade models, see Deardorff (1998).

Table 1 - Comparison between opt flows and final flows in Extra-EU trade of EU countries. 1989-1997

	1989 (x1000 Ecu)				1997 (x1000 Ecu)				1997/1989 M+X	1997/1989 M+X	1989 M+X	1997 M+X	1997/1989 M+X
	Final Flows		Opt Flows		Final Flows		Opt Flows						
	Import	Export	Import	Export	Import	Export	Import	Export	Final flows	Opt flows	Opt share	Opt share	Opt share
001 FRANCE	38408307	43906492	1023394	974780	51909106	68533166	2122262	2543652	1,46	2,34	2,43%	3,87%	1,60
002 BELGIUM AND LUX	21128990	17935347	112563	145795	30703795	28578795	707821	378204	1,52	4,20	0,66%	1,83%	2,77
003 NETHERLANDS	20798829	12062585	1086086	730648	47220779	23205991	995127	1255950	2,14	1,24	5,53%	3,20%	0,58
004 GERMANY	87319777	116310815	2708565	2113568	1,15E+08	1,61E+08	7485380	5950654	1,35	2,79	2,37%	4,87%	2,06
005 ITALY	38377899	47698493	575803	578285	47968401	83281971	1572890	1514140	1,52	2,67	1,34%	2,35%	1,75
006 UNITED KINGDOM	64032366	48693038	358708	465346	91106976	79005051	985319	1659693	1,51	3,21	0,73%	1,55%	2,13
007 IRELAND	3292652	2241827	708	29294	7300189	7858383	11190	143173	2,74	5,15	0,54%	1,02%	1,88
008 DENMARK	8390874	8636157	170007	127840	7559112	9138400	366913	254257	0,98	2,09	1,75%	3,72%	2,13
009 GREECE	3646106	763809	589	2438	5211444	2545726	62827	120206	1,76	60,47	0,07%	2,36%	34,38
010 PORTUGAL	2789465	2425735	7971	8051	3900900	2920754	5616	14824	1,31	1,28	0,31%	0,30%	0,98
011 SPAIN	13986908	11282246	222830	143925	17240759	19171896	123466	159995	1,44	0,77	1,45%	0,78%	0,54
030 SWEDEN	0	0	0	0	12722997	29847424	180994	370047	/	/	/	1,29%	/
032 FINLAND	0	0	0	0	5777174	13586332	109490	286806	/	/	/	2,05%	/
038 AUSTRIA	0	0	0	0	10405463	16340209	391976	454442	/	/	/	3,16%	/
EU15	302172173	311956544	6267224	5319970	4,54E+08	5,45E+08	15121271	15106043	1,63	2,61	1,89%	3,03%	1,60

Source: Comext

Table 2 shows that in 1989 the main users of OPT were five countries: Germany, France, Netherlands, Italy and the UK. The first one collected more than 40% of total EU OPT flows, France and Netherlands followed with shares of more than 17% and 15% respectively, then Italy and the UK followed with shares below 10%. In 1997 the rank of main users has changed because of the sharp drop in the Netherlands recourse to OPT: now only Germany, France and Italy display shares higher than 10%.

Tab 2 - Main users of opt in EU 1989, 1997

	Imports+Exports (Extra-EU) millions of ECU		OPT Shares	
	1989	1997	1989	1997
001 FRANCE	1.998	4.666	17,24%	15,44%
002 BELGIUM AND LUX	258	1.086	2,23%	3,59%
003 NETHERLANDS	1.817	2.251	15,68%	7,45%
004 GERMANY	4.822	13.436	41,62%	44,45%
005 ITALY	1.154	3.087	9,96%	10,21%
006 UNITED KINGDOM	824	2.645	7,11%	8,75%
007 IRELAND	30	154	0,26%	0,51%
008 DENMARK	298	621	2,57%	2,05%
009 GREECE	3	183	0,03%	0,61%
010 PORTUGAL	16	20	0,14%	0,07%
011 SPAIN	367	283	3,17%	0,94%
030 SWEDEN	0	551	0,00%	1,82%
032 FINLAND	0	396	0,00%	1,31%
038 AUSTRIA	0	846	0,00%	2,80%
EU15	11.587	30.227	100,00%	100,00%

Source: Comext

When the sectoral composition of OPT flows is considered, we can observe that only three main aggregates account for more than 80% of total manufacturing industry flows: Machinery (electrical and non electrical, CN 84 and 85), Textiles-apparel (CN 50-63) and Transport (CN 86-89). In particular, the first column of table 3 shows that in 1989 Machinery assembled more than 40% of OPT between EU and Extra-EU countries, while Textile-apparel and Transport accounted for 33% and 7% respectively. In 1997 the weight of Textile-apparel sector has increased further.

Interestingly, this sectoral concentration of OPT flows links up with a geographical specialisation, indicating a straightforward international division of labour.

Table 3 - Sectoral composition and geographical distribution of EU OPT flows. 1989-1997.

Percentage shares

	1989						
		Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**	Tot Areas
Sectors*							
Text-appar	33%	29%	9%	62%	0%	0%	100%
Mec-Elect	41%	2%	44%	3%	46%	5%	100%
Transport	7%	3%	1%	14%	82%	0%	100%
Others	19%	11%	8%	41%	38%	1%	100%
Total Manuf	100%	11%	26%	26%	34%	3%	100%
	1997						
		Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**	Tot Areas
Sectors*							
Text-appar	37%	12%	6%	82%	0%	0%	100%
Mec-Elect	38%	2%	52%	21%	23%	2%	100%
Transport	9%	2%	1%	8%	88%	1%	100%
Others	16%	5%	10%	53%	30%	1%	100%
Total Manuf	100%	6%	25%	46%	22%	1%	100%

(*) Text-appar: 50-63; Mec-Elect: 84-85; Transport: 86-89; Total manuf: 28-99
(**) Selected countries

Source: Comext

In particular, table 3 shows that OPT flows in the Textile-apparel sector are almost entirely channelled to CEECs, Transport OPT flows are mostly directed to North America and OPT flows in machinery are concentrated (to a lesser extent) to Far Eastern countries. Globally, CEECs area is becoming the main pole of attraction of EU OPT flows, assembling almost 50% of total OPT. This tendency to a sectoral/geographical polarisation of OPT flows is even more evident when we look at a single EU country. For example, in the case of Germany and Italy in 1997 the great part of their total OPT flows (60% and 70 % respectively) concentrates on the CEEC area and in the Textile-apparel sector, while in the case of France and the Netherlands OPT flows are mostly oriented towards Far East Asian countries in the Machinery sector (see country tables in annex).

This evident correlation between geographical and sectoral specialisation in OPT flows testifies not only a strong international division of labour based on comparative advantages but also links between countries due to the spheres of influence factors[5].

However, when we look at the relevance of OPT flows in comparison with the final trade flows at the sectoral and geographical level we can note that only in the case of the CEEC area and in the Textile-apparel sector the weight of OPT is remarkable. Table 4 reports the ratio between OPT flows and final trade flows and shows that only in the case of CEEC in Textile-apparel the ratio is bigger than one.

Table 4 - OPT flows/final flows ratio. Total EU

(Imports+Exports, thousand of ECUs)

	1989					
	Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**
Sectors*						
Text-appar	8%	14%	2%	107%	0%	0%
Mec-Elect	3%	1%	7%	3%	4%	3%
Transport	1%	0%	0%	7%	3%	0%
Total 3	3%	4%	5%	24%	4%	2%
Total Manuf	2%	2%	3%	14%	2%	1%
	1997					
	Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**
Sectors*						
Text-appar	15%	10%	2%	114%	0%	1%
Mec-Elect	3%	2%	6%	7%	3%	1%
Transport	2%	1%	0%	1%	7%	0%
Total 3	5%	4%	5%	19%	4%	1%
Total Manuf	3%	2%	3%	12%	2%	1%

Source: Comext

For this reason in the next section, after a short reconstruction of the debate on trade and job, we try to evaluate the differential labour

[5] Roemer (1977) has highlighted the role of sphere of influence factors in world trade by crossing sectoral and geographical specialization of main advanced countries. An example of sphere of influence factors acting in OPT is represented by France OPT flows in Textile-apparel. In 1989 a large proportion of those flows were oriented to North Africa, indicating an evident Roemer-type link between the country and a geographical area characterized by previous colonial relationship with France.

market impact of OPT flows with respect to the final flows by looking at CEECs in the textile-apparel sector. Given that Germany and Italy assemble the main part of EU OPT in CEECs in Textile-apparel (60% and 15% respectively), the trade impact will be measured with reference to the labour markets of these two countries.

3. The impact of OPT on labour markets

3.1 Trade and labour markets: an open issue

In the recent debate on "Trade and labour markets" trade theorists are in the forefront of those denying the importance of international integration in the adverse shift in labour demand for the unskilled which has occurred in OECD countries over the last two decades.

At first sight this observation seems paradoxal because the standard textbook model of international trade, the two-good, two-factor Heckscher-Ohlin-Samuelson model, predicts a strong link between trade flows and income differentials: the opening of international trade between countries with different endowments of human skills leads to a decline in the relative wages of unskilled workers in the more developed countries (or to unemployment, if the framework is adapted to the case of advanced economies with larger institutional rigidities in wage setting).

Although the main prediction of the theory seems to confirm stylized facts, in effect when all implications of HOS model are rigorously compared with empirical evidence some crucial inconsistencies emerge. If we look carefully at the chain of causation postulated by HOS model we can identify three steps: 1) increasing exports of unskilled-intensive goods by developing countries push down the price of these goods in developed countries, inducing a decline in the relative wage of unskilled labour[6], thereby 2) causing substitution in production towards unskilled labour, and 3) maintaining full employment by inter-sectoral substitution of production towards more skill-intensive products. When we compare this theoretical story with em-

[6] According to Stolper-Samuelson theorem.

pirical evidence we can observe that[7]: 1) the positive one to one relationship between prices and wages, so crucial in the HOS framework, is not fully confirmed by data[8]; 2) instead of a lower skilled/unskilled ratio, empirical evidence shows the adoption by firms of a higher ratio in all sectors[9]; 3) no evidence of substantial inter-sectoral movement of production emerges in advanced countries. Furthermore the observation that the great bulk of world trade (also North-South trade) is characterised by intra-industry flows - a type of exchange implying less severe reallocative and distributive effects - has led to consider the adoption of the HOS framework less plausible[10].

All these reasons have progressively weakened the trade-based explanation of unskilled-adverse change in labour demand and the emphasis has recently shifted to wage inequality as resulting from skill-biased technological change[11]. However, when one looks for a technological explanation of job displacement, one notes that the trade effect is too quickly removed insomuch as it is universally identified with the HOS story without any attempt to turn to an alternative analytical framework. In the end, the recourse to skill-biased technological change seems to amount to no more than a tautology[12].

Recently Celi and Segnana (1997) and Celi and Smith (1999) have suggested that a way of reconsidering the importance of the labour market effects of international trade is to look at vertical product differentiation in intra-industry trade (henceforth IIT). Actually the reallocative and distributive effects of IIT are neutral only if the product differentiation is of a horizontal type, that is an exchange of varieties of a similar product differentiated by attributes in a given quality level be-

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7 Especially Lawrence and Slaughter (1993) have remarked discrepancies between HOS predictions and empirical evidence with reference to the United States.

8 While Lawrence and Slaughter find no evidence of relative price changes in USA, Sachs and Shatz (1994) observe some relative price variations.

9 Krugman and Lawrence (1994) provide evidence that at 2 digit level of sectoral aggregation the increase in the relative wages of skilled workers (proxied by non-production workers) has been associated with the rise in the relative employment of skilled workers. Lawrence and Slaughter (1993) confirm this positive relationship at 3 and 4 digit level of aggregation.

10 Krugman and Lawrence (1994).

11 See the recent symposium in *Journal of Economic Perspectives*, Spring 1997.

12 "Admittedly, the preliminary conclusion that technological change caused the relative demand shifts was somewhat tautological: a) it must have been X_1, X_2 or X_3; b) it was not X_2 or X_3; c) ergo, it was X_1", Johnson (1997), *Journal of Economic Perspectives*, Spring, p. 47.

tween countries with similar factor endowments and similar income levels. But if the product differentiation is of a vertical nature the impact of IIT is not neutral. In fact, it is reasonable to suppose that differences in quality are associated with differences in skill content, so that high (low) quality products incorporate high (low) content of skilled labour. In this case trade among countries with different endowments of human skill induces movements of specialization along the quality spectrum for each sector. In other words, trade induces factor substitution *within* sectors at the level of individual products where factors are human capital, knowledge, immaterial and specific factors, etc.

Conventional factor content of trade (FCT) studies fails to capture the impact of international trade within industries because they assume the sector as the unity of analysis. In particular, these studies fail to capture the impact associated with: 1) inter-product trade within-industry, 2) vertical intra-product trade (quality differentiation).

The model presented by Celi and Smith deals with the issue of aggregation by providing an account of intra-industry trade that is based on comparative advantage. Each sector is modelled as containing a continuum of techniques[13]. This permits factor substitution within sectors at the level of the individual product, allowing a much richer range of substitution effects. The model explains both intra-industry trade and inter-industry trade as deriving from the factor endowment differences between countries, it implies that trade will affect inequality, and the properties of the model are consistent with the three stylised facts which Lawrence and Slaughter use to dismiss the Stolper-Samuelson explanation of American wage change. Applying the model to trade between Italy and 'non-advanced countries' and inferring the factor content of intra-industry trade from the inter-sectoral relationship between factor intensity and the average unit values of exports, Celi and Smith find that the labour market effects of intra-industry trade add significantly to the estimated factor market impact of trade.

Recently Feenstra (1998) has remarked that another important source of underestimation of the labour market effect of international integration is the lack of an adequate consideration of the vertical disintegration of production within-industry on international scale:

[13] The supply side of the model is derived from Feenstra and Hanson (1996).

"…Outsourcing has a qualitative similar effect on reducing the demand for unskilled relative to skilled labor within an industry as does skilled-biased technological change. This insight has several important implications. First, we should not asses the proximate cause of the decline in employment and wages of unskilled workers by attributing all within-industry shifts in labor demand to technology, and allowing trade to operate only via between-industry shifts. This was the approach taken by Lawrence and Slaughter (1993) and Berman, Bound and Griliches (1994), both of whom considered only trade in final goods. In that context, it is correct that international trade must affect labor demand through interindustry shifts. But as soon as trade in intermediate inputs is permitted, as with outsourcing, then changes in the demand for labor within each industry can occur due to trade, as well…[14]"

Conceptually, the observation of Feenstra about the labour market impact of trade flows originating from international fragmentation of production is important but the implementation of empirical estimates about this phenomenon represents a very difficult task, given the lack of sistematic information about the international relocation processes acting within-industry. In this paper we offer a very preliminary attempt to deal with this empirical issue. The availability of a powerful data set for EU countries (Eurostat-Comext) distinguishing OPT - a form of vertical trade - from final flows and of an empirical methodology (offered by Celi and Smith) able to estimate the factor content of intra-industry have yielded the temptation to implement a quantitative measurement of vertical trade impact. In the previous section we have observed that the OPT share of trade flows is trivial on aggregate but it is relevant in specific sectors and markets. In the case of CEECs in the Textile-apparel sector OPT flows are even bigger than final flows. So any attempt to calculate the effects of EU trade with CEECs on EU labour markets has to hold this aspect in due consideration. In the next section we try to estimate the differential impact of OPT flows in comparison with final flows by looking at Eu trade with CEECs in the Textile-apparel sectors. It seems to us that the interest of this empirical application is twofold: on the one hand it represents a way to treat, at empirical level, an important analytical issue that recently has emerged in the debate on trade and job; on the other hand it gives the opportunity to transpose the debate on "liberalization and the labour markets", developed in the late 1980s and the 1990s especially in the US, on EU side with particular regard to the dynamics of integration with CEE countries.

[14] Feenstra (1998), page 41.

3.2 An empirical application

3.2.1 The structure of trade flows

A preliminary investigation of the link between trade and labour markets requires us to look carefully at the nature of trade flows. In other words, a useful task is to identify the share of trade flows which have an impact on labour markets. Obviously, in this task the level of aggregation matters. If we adopted a conventional approach based on the Heckscher-Ohlin model of inter-industry trade applied to three-digit sectors we would exclude from FCT calculation the share of trade consisting of intra-industry flows (IIT), that is to say offsetting flows of imports and exports within 3-digit sectors which have zero effect in the factor content calculation. But following the conventional wisdom we risk to incur in an underestimation of trade impact because of a misjudgement of a part of IIT flows which, on the contrary, could have a labour market effects. This part consists of: 1) inter-product flows within-industry, 2) intra-product flows differentiated by quality[15].

In order to take account of the two types of trade flows disregarded in conventional FCT studies, we have calculated: 1) IIT indices respectively at the 3 and 8 digit level to evaluate to what extent the level of aggregation hides inter-product trade; 2) 8-digit IIT indices distinguishing vertical and horizontal components in order to single out 2-way trade flows differentiated by quality.

The methodology used to disentangle horizontal and vertical IIT was based on the approach suggested by Greenaway, Hine and Milner (1995). These authors - following Abd-el-Rahman (1991) - decompose the unadjusted Grubel-Lloyd (G-L) index in vertical and horizontal IIT by using information deriving from unit values calculated at the 5-digit level (according to SITC)[16]. Recourse to unit values (UV) of exports and imports is a way to collect information about the quality of traded goods. In our calculations, unit values are computed according to a very narrow 8-

[15] The following example illustrates how trade impact may be misjudged because of a lack of information about the two points remarked above. Suppose that at 3-digit level of aggregation the share of IIT in total trade is 60%; conventionally, only 40% of total trade (inter-industry trade) has an impact on labour markets. But if 30% of total trade is vertical IIT (half of the overlap involves 2-way trade flows of different qualities), the share of total trade inducing effects on labour markets increases to 70%. This latter percentage increases further if the IIT index was calculated at a greater level of disaggregation, allowing to capture inter-product trade.

[16] An alternative method of disentagling horizontal and vertical IIT is suggested by CEPII (1995).

digit definition of product.[17] The criterion used to discriminate between the two components of IIT was the inclusion in the numerator of G-L index of only the trade flows of those product categories whose unit value of exports relative to the unit value of imports is outside (or within) a certain range of variation (±15%). Where the absolute value of the difference between the unit values for exports and imports was more (less) than 15%, the share of vertical (horizontal) IIT was obtained[18].

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[17] The controversial aspects of the use of UV as a proxy of prices are well-known in the literature. In the present context, however, considering that UVs are related to 8 digit level categories, the risk of distortions caused by aggregation is ruled out.

[18] If *c* denotes all 8 digit level product categories in manufacturing industry, the Grubel-Lloyd IIT index is:

$$\text{ITT} = 1 - \frac{\sum_c |X_c - M_c|}{\sum_c (X_c + M_c)} \tag{1}$$

where X_c and M_c denote the value of exports and imports respectively. The index (1) can be rearranged as:

$$\text{ITT} = \frac{\sum_c (X_c + M_c) - \sum_c |X_c - M_c|}{\sum_c (X_c + M_c)} \tag{1b}$$

The numerator of index (1b) can be recalculated by considering only those categories in which the absolute value of the difference between the UV for exports and imports is greater than 15%; that is, $1.15 < UVX_c / UVM_c < 0.85$. Consequently, index (1b) becomes the share of vertical intra-industry trade in total trade:

$$\text{VITT} = \frac{\sum_{cv} (X_{cv} + M_{cv}) - \sum_{cv} |X_{cv} - M_{cv}|}{\sum_c (X_c + M_c)} \tag{2}$$

Finally, the same procedure can be adopted to obtain the share of horizontal intra-industry in total trade. In this case the numerator of the index is calculated by considering the items where $0.85 < UVX_c / UVM_c < 1.15$; that is, those residual categories where quality differences between exports and imports are not very pronounced. The result is:

$$\text{HITT} = \frac{\sum_{ch} (X_{ch} + M_{ch}) - \sum_{ch} |X_{ch} - M_{ch}|}{\sum_c (X_c + M_c)} \tag{3}$$

Under the above assumptions, it is natural that:

$$\text{IIT} = \text{VIIT} + \text{HIIT} \tag{4}$$

Intra-industry trade indices have been calculated in the case of German and Italian trade with CEECs respectively in 1997. The sectors considered belong to the aggregate Textile-apparel-footwear-leather[19]. The trade structure emerging from the calculation of IIT indices is reported in the four figures below. Figure 1 and 2 refer to final flows (proxied by non-OPT flows) of Germany and Italy respectively. Figure 3 and 4 concern OPT flows for the same countries. Let me illustrate as to interpret the numbers reported in the diagrams.

In the case of German final flows (figure 1), IIT calculated at 3-digit represents 55% of total trade. This means that inter-industry trade, that is HO-type trade, corresponds to 45% of total flows. But if we calculate Grubel-Lloyd index at 8-digit, then the 2-way trade drops to 31%; consequently HO trade rises to 69%, indicating that the 3-digit calculation hides 24% of trade flows which is inter-product trade (that is IIT at 3-digit but HO trade at 8-digit).

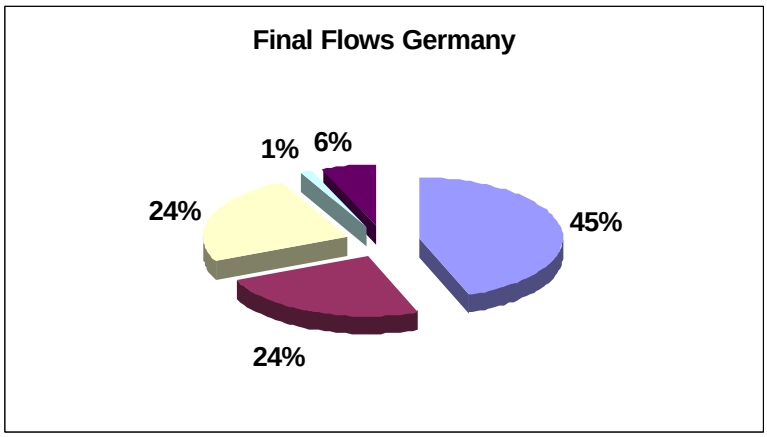
In addition, if we divide the 8-digit Grubel-Lloyd index (31%) in the vertical and horizontal components, we note that the trade flows differentiated by quality predominate (VIIT = 25%, HIIT = 6%)[20]. Virtually, only a small residual fraction of total trade, HIIT = 6%, has no effect on labour markets: a quite different number from that deriving from a mere conventional 3-digit calculation (IIT = 55%).

Figure 2 shows that the structure of Italian final flows is quite similar to the case of Germany and no particular comment needs to be made by us. In the end, the analysis of trade structure with reference to final flows suggests that the level of aggregation is important and that any FCT calculation has to hold this aspect in due consideration. This conclusion is in line with results that Celi and Smith (1999) have obtained in the case of Italian manufacturing trade with less advanced countries.

[19] We consider 10 3-digit NACE sectors and all 1588 8-digit products beloging to those sectors.

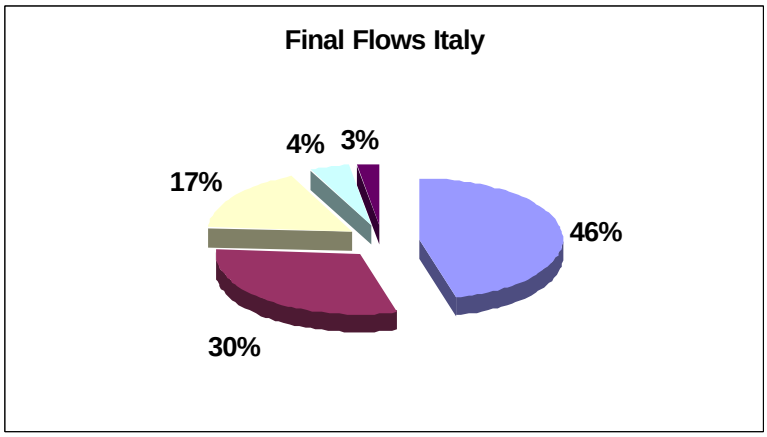
[20] VIIT can be further divided in $VIIT^{+}$ and $VIIT^{-}$. The first component indicates trade flows where UVs of exports are bigger than UVs of imports. The second component refers to trade flows where it is UVs of imports that are larger. In figure 1, we note that $VIIT^{+}$ (24%) prevails on $VIIT^{-}$ (1%).

Figure 1 - Structure of Germany trade with CEEC in Textile-apparel-footwear-leather sectors - Final flows - 1997



Legenda:
HO (3-digit) = **45%**
IIT (3-digit), HO (8-digit) = **24%**
$VIIT^{+}$ = **24%**
$VIIT^{-}$ = **1%**
HIIT = **6%**

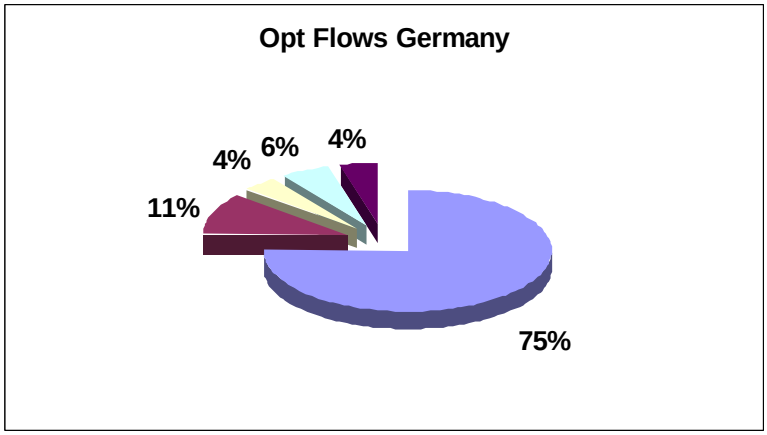
Figure 2 - Structure of Italy trade with CEEC in Textile-apparel-footwear-leather sectors - Final flows - 1997



Legenda:
HO (3-digit) = **46%**
IIT (3-digit), HO (8-digit) = **30%**
$VIIT^{+}$ = **17%**
$VIIT^{-}$ = **4%**
HIIT = **3%**

But when we apply the same trade structure analysis to OPT flows, the results are different from those deriving from the final flows. Figure 3 shows that, in the case of Germany, even at 3-digit level HO-type trade is the predominant part of total trade (75%). From this results we can infer that also a FCT calculation carried out at 3-digit level will produce a balanced trade impact greater than final flows[21]. Figure 3 also dysplays that, although in a lesser degree than in final flows, inter-product trade and VIIT augment HO trade (11% and 10% more respectively).

Figure 3 - Structure of Germany trade with CEEC in Textile-apparel-footwear-leather sectors - OPT flows - 1997



Legenda:
HO (3-digit) = **75%**
IIT (3-digit), HO (8-digit) = **11%**
$VIIT^{+}$ = **4%**
$VIIT^{-}$ = **6%**
HIIT = **4%**

In the end, in the case of Germany OPT, the analysis of flow structure suggests that the trade impact might be more substantial than in the case of final flows but, at the same time, the level of ag-

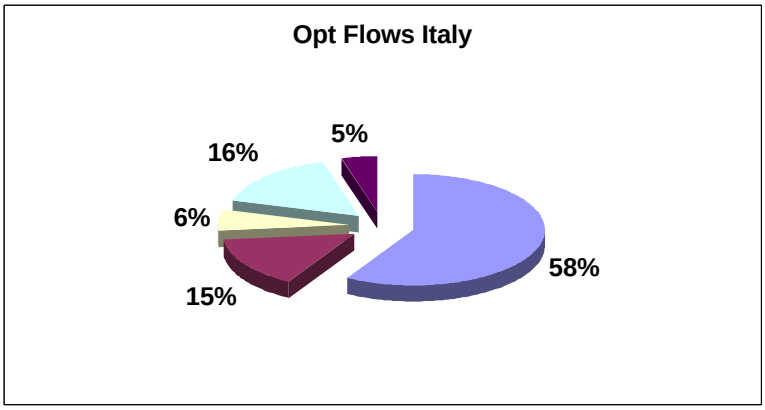
[21] We expect that even if the comparison was between 8-digit final flows and 3-digit OPT flows the FCT analysis would produce a bigger labour market impact for OPT flows, because input coefficients differ across sectors more than across products within sectors.

gregation seems to play a less relevant role in comparison with final flows.

However, when we look at Italian OPT flows, we observe that IIT is bigger than in the case of Germany (42% against 25%). This result confirms that the two countries have different models of outsourcing towards CEECs. In the case of Italy, a relevant proportion of the re-imports of apparel consists of products originally exported under the heading "apparel". In general, Italy relocates to CEECs the segments of production process very close to final stage of output, while Germany transfers to CEECs a broader spectrum of productive segments in order to re-import final goods[22].

Therefore, given the higher level of IIT in OPT flows, in the case of Italy the issue of aggregation seems to play a more important role. In effect, figure 4 shows that IIT at 3-digit which is inter-product trade at 8-digit amounts to 15%. In addition VIIT (that is 8 digit 2-way trade flows differentiated by quality) adds up to 22%.

Figure 4 - Structure of Italy trade with CEEC in Textile-apparel-footwear-leather sectors - OPT flows - 1997



Legenda:
HO (3-digit) = **58%**
IIT (3-digit), HO (8-digit) = **15%**
$VIIT^{+}$ = **6%**
$VIIT^{-}$ = **16%**
HIIT = **5%**

[22] Baldone Sdogati and Tajoli (1999).

However, with regard to VIIT, we have to ask if it makes sense to apply a measure of quality differentiation to OPT flows. If we look at figure 4 we note that $VIIT^{-}$ prevails in VIIT. In other words, 8 digit 2-way trade flows where the UVs of exports are lower than UVs of imports prevail against $VIIT^{+}$ (where it is the UVs of imports that are lower). At first sight this outcome seems to be puzzling because it would be reasonable to assume that the quality of Italian exports is higher than CEEC exports. Nevertheles this result is not surprising because we are observing trade flows deriving from relocation of the phases of production abroad and not the trade flows of final goods. In other words, in the case of OPT, the comparison between export UV and import UV of a particular 8-digit product doesn't signal a mere quality differentiation as in the case of the final goods. In principle, quality differentiation between intermediate goods could exist, but how can we understand if the commodity exported and the commodity imported are at the same stage of processing or not? In other words, how to disentangle differences emerging from added value and differences due to quality differentiation[23]?

Even so, we think that recourse to UVs permits us to deal with the issue of aggregation in FCT analysis also in the case of OPT. In particular, as it will be illustrated in the next section, the use of UVs at 8-digit allows us to capture the labour market impact of inter-product trade that, in the context of OPT flows, represents a form of vertical disintegration of production. In other words, in the case of OPT, UVs turn to be useful to evaluate the impact of vertical disintegration rather than vertical differentiation in trade flows.

[23] We have calculated the ratio between UV of total imports and exports (UV_M/UV_X) for final flows and OPT flows respectively. The UVs have been calculated at 8-digit level and averaged for the total aggregate "Textile-apparel-footwear-leather" across 8-digit commodities. In the case of Germany, final flows show a ratio < 1 while OPT flows a ratio > 1. This result is what we expect because final goods exported by Germany are on average more skill intensive than final goods imported from CEECs, while in OPT flows the intermediate goods exported from Germany to be processed in CEECs come back as imports with much added value reflected in a higher UV_M on average. In the case of Italy, also final flows display a ratio > 1, other than OPT flows. This results is anomalous and could indicate that also in non OPT flows there is vertical disintegration (arms length OPT). This point will be discussed in the section where FCT results are illustrated.

3.2.2 FCT analysis

In this section we try to evaluate the differential labour market impact of OPT flows in comparison with final flows. In particular, we compare results deriving from 3-digit FCT calculation (conventional procedure) and those from 8-digit computation. The two factors considered are skilled and uskilled labour. In the case of 3-digit calculation, the availability of industry data (INDE data set with sectors defined according to NACE) enable us to obtain input coefficients: the proxy for skilled labour (unskilled labour) coefficient is obtained as the ratio between non manual workers (manual workers) and turnover. Unfortunately, at the 8-digit level no sistematic industry data are available. Therefore we adopt the following estimate procedure suggested by Celi and Segnana (1997) and improved by Celi and Smith (1999) based on unit values of trade flows in order to compute input coefficients at the 8-digit level.

Firstly a cross-sector regressions at the 3-digit level are carried out in order to verify whether unit values (a proxy for quality) could explain skill intensity:

$$SKY = \alpha_0 + \alpha_1 LUVXW$$

$$UNY = \alpha_0 + \alpha_1 LUVXW,$$

where:

SKY = 3-digit skilled labour coefficient (non manual workers/turnover)
UNY = 3-digit unskilled labour coefficient (manual workers/turnover)
LUVXW = log of unit value of export at 3-digit level[24]

Regression results[25] are the following:

$$SKY = 1.329 + 0.318\ LUVXW \qquad R^2 = 0.40$$
$$(11.20)\ \ (7.19)$$

[24] Note that the regressor expressed at the 3-digit level has been calculated at 8-digit level and averaged for each sector across all 8-digit commodities. Therefore information at 8-digit is not lost at 3-digit.

[25] Regressions were carried out on 77 observations referred to Italy (from Nace code 260 to 495).

$$UNY = 4.756 + 0.346\ LUVXW \qquad R^2 = 0.09$$
$$(5.57)\quad (2.65)$$

The constant term and the LUVXW coefficient show an acceptable level of significance[26]. Hence, if there is a statistically significant association between skill intensity and unit values at 3 digits**,** and if we assume that this relationship also holds at 8 digits, we can use the above-estimated equations to obtain 8-digit SKY and UNY via 8-digit unit values[27]. Note that the above equations can be used to derive coefficients of trade partners (CEECs) when the unit values of imports are applied in the place of the unit values of exports in accordance with a Wood-type approach[28].

Therefore the previous procedure allows us to conduct two types of FCT calculation. The first calculation (hence un-Wood method) attempts to calculate the labour market effects of the trade that is measured as intra-industry trade at the 3-digit level but as inter-product trade at the 8-digit level by imputing labour input coefficients to each 8-digit commodity, but the same input coefficients to exports and to import substitutes. The second calculation (hence Wood method) goes further: by imputing separate coefficients to exports

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[26] At first sight the positive coefficient in the second regression may seem surprising, but it is easily checked that the two regressions together imply that the ratio of non-manual to manual labour is increasing in the unit value of exports, which is consistent with the notion of product quality being skill-intensive. It is also acceptable that higher quality products require more of both kinds of labour.

[27] The best procedure to derive 8-digit coefficients is to adjust the above estimated equations by inserting an error term obtained as the difference between the estimated value and the observed value for each 3-digit coefficient. Implicitly in this procedure we assume that each particular 3-digit error term approximates the error term of all 8-digit categories belonging to that particular 3-digit sector:

$$SKY_{8\text{-digit}} = 1.329 + 0.318\ LUVX_{8\text{-digit}} + e_{3\text{-digit}}$$

$$UNY_{8\text{-digit}} = 4.756 + 0.346\ LUVX_{8\text{-digit}} + e_{3\text{-digit}}$$

[28] Wood (1994) contests conventional FCT studies, arguing that these studies, by using the factorial coefficients matrix of developed countries as the estimator of factor content for both imports and exports, have underestimated the uskilled labour content of less developed countries (LACs) exports to developed countries. Consequently, they have undervalued the displacement effect of the developed countries' trade with LACs on unskilled labour demand in developed countries. He suggests using different input coefficients for imports and exports respectively.

and import substitutes, it allows for factor market effects from vertical intra-industry trade at the 8-digit level, that is from those intra-product flows differentiated by quality. In the case of OPT flows, for the reasons already discussed, the procedure more appropriate is the un-Wood method.

Table 5 and table 6 reports FCT results obtained for Germany and Italy respectively[29].

Table 5 - Impact of Germany trade with CEECs on Germany labour market - 1997[a]

3-digit balanced trade impact

Final flows:	skilled = +0.36%,	unskilled = -0.58%,	relative demand for skilled = **+0.94%**
Opt flows:	skilled = -1.40%,	unskilled = -3.81%,	relative demand for skilled = **+2.38%**

8-digit un-Wood balanced trade impact

Final flows:	skilled = +0.16%,	unskilled = -0.84%,	relative demand for skilled = **+1.00%**
Opt flows:	skilled = +1.22%,	unskilled = -1.51%,	relative demand for skilled = **+2.73%**

8-digit Wood balanced trade impact

Final flows:	skilled = -0.33%,	unskilled = -0.78%,	relative demand for skilled = **+1.11%**
Opt flows:	skilled = +1.18%,	unskilled = -1.53%,	relative demand for skilled = **+2.71%**

([a]) Trade impact is expressed as percentage of employment.

In the case of Germany, FCT results confirm our expectations based on the structure of trade flows: i) much larger effects in OPT than in final flows because inter-industry trade is bigger in Opt; ii) 3-digit FCT calculation captures most effect. Anyway, by moving from 3-digit to 8-digit un-Wood calculation, the differential between OPT impact and final flow impact increases 20 percentage points (from +153% to +173%). If the comparison is made between 3-digit and 8-

[29] Tables 5 an 6 display the effect of trade in terms of relative demand for skilled. The relative demand for skilled is obtained as the difference between the balanced trade impact for skilled and unskilled. The impact is expressed in terms of the percentage share of total employment for skilled and unskilled respectively.

digit Wood method the differential decreases. This suggests that the FCT calculation using different coefficients for exports and imports (based on UVs of exports and imports respectively) incorporates, in the case of OPT flows, an element of distortion (an anti-HO effect) because in OPT $UV_M > UV_X$. As remarked above, the Wood method is useful to capture quality differentiation but not vertical disintegration; therefore it is useful in the analysis of final flows but not in OPT flows.

The results for Italy reported in table 6 are more problematic.

Table 6 - Impact of Italy trade with CEECs on Italy labour market - 1997[a]

3-digit balanced trade impact

Final flows:	skilled = +0.11%,	unskilled = -0.32%,	relative demand for skilled = **+0.43%**
Opt flows:	skilled = +0.23%,	unskilled = -0.27%,	relative demand for skilled = **+0.50%**

8-digit un-Wood balanced trade impact

Final flows:	skilled = -0.013%,	unskilled = -0.38%,	relative demand for skilled = **+0.37%**
Opt flows:	skilled = +0.25%,	unskilled = -0.28%,	relative demand for skilled = **+0.53%**

8-digit Wood balanced trade impact

Final flows:	skilled = +0.043%,	unskilled = -0.37%,	relative demand for skilled = **+0.41%**
Opt flows:	skilled = +0.14%,	unskilled = -0.31%,	relative demand for skilled = **+0.45%**

Trade impact is expressed as percentage of employment.

However, let's recall the structure of Italian trade and our FCT results expectations based on it. Italian OPT has more IIT so we need 8 digit calculation to capture the impact of inter-product trade which is IIT at 3-digit. In addition, in the Italian case we found that also in final flows $UV_M > UV_X$ on average (this means that also in final flows, that is in non OPT flows, there would be vertical disintegration)[30]. It seems to us that FCT results for Italy reported in table 6 don't contrast our expectations because: i) the differential between OPT impact and fi-

[30] On this point see footnote 23.

nal impact increases 27 percentage points (from +16% to +43%) by moving from 3-digit to 8-digit un-Wood. An increase proportionally bigger than in Germany case; ii) In final flows by moving from 3-digit to 8-digit calculation the impact decreases. This result is not so anomalous because it confirms the finding that also in final flows $UV_M > UV_X$ on average (with the implications remarked above). Surely in the case of Italy the absolute value of numbers is trivial. Nevertheless, if numbers are discussed in relative terms some reasonable interpretation of data could be extrapolated.

In conclusion, the FCT analysis applied to the case of Germany and Italy trade with CEECs in the Textile-apparel-footwear-leather sectors suggests that labour market effects of OPT flows is stronger than the impact of final flows. This result is confirmed both at 3 and 8 digit level of aggregation.

4. Conclusions

In this paper the impact of OPT between EU countries and CEECs on EU labour markets has been analysed.

A preliminary overview of OPT in EU countries has shown that on aggregate this type of trade still represents a small fraction of total trade. Nevertheless OPT flows display a growth rate much more pronounced in comparison with the dynamics associated with final flows (20% against 7.5% on yearly basis in the period 1989-1997), confirming the findings mentioned in recent studies of a increasing importance of vertical flows in world trade.

When the sectoral composition of OPT flows is considered, data show that only three main aggregates account for more than 80% of total manufacturing industry flows: Machinery, Textiles-apparel and Transport. Interestingly, this sectoral concentration of OPT flows links up with a geographical specialisation, indicating a straightforward international division of labour. In particular, OPT flows in Textile-apparel sector are almost entirely channelled to CEECs, Transport OPT flows are mostly directed to North America and OPT flows in machinery are concentrated to Far Eastern countries. Globally, the

CEECs area is becoming the main pole of attraction of EU OPT flows, assembling almost 50% of total OPT. However, when we look at the relevance of OPT flows in comparison with final trade flows at the sectoral and geographical level we can note that only in the case of CEEC area and in Textile-apparel sector the weight of OPT is remarkable.

For this reason we have chosen to evaluate the differential labour market impact of OPT flows with respect to final flows by looking at CEECs in Textile-apparel-footwear-leather sectors. Given that Germany and Italy assemble the main part of EU OPT in CEECs in those sectors, the trade impact has been measured with reference to the labour markets of these two countries. A preliminary analysis of the structure of trade flows has delineated differents models for the two countries. In the case of Germany, IIT in OPT is smaller than in final flows; for this reason we expect a greater labour market impact associated to OPT flows. On the contrary, in the case of Italy, IIT in OPT is much more relevant; this suggests that, especially in the Italian case, we need to conduct FCT analysis also at 8-digit level in order to capture labour market impact associated with trade flows which are IIT at 3 digit but inter-product trade at 8 digit.

In accordance with the analysis of the structure of trade flows, FCT analysis applied to the case of German and Italian trade with CEECs in the Textile-apparel-footwear-leather sectors suggests that the labour market effects of OPT flows are stronger than the impact of final flows. This result is confirmed both at 3 and 8 digit level of aggregation.

The procedure based on UVs to infer input coefficients at 8 digit turns out to be useful in disclosing factor substitution effects due to the vertical disintegration of production in OPT, other than vertical differentiation in final flows. Surely calculation is based on a quite fragile inference whose robustness must be tested and the whole exercise suffers from the limitations of a crude FCT calculation with no price factor adjustment and other more sophisticated general equilibrium effects. Nevertheless the approach presented in this paper is a preliminary way to deal with the issue of aggregation and heterogeneity in trade; it suggests that any accurate study of labour market effect of trade should consider the importance of this aspect.

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Annex

German tables

Table 1-A

Sectoral composition and geographical distribution of Germany OPT flows. 1989-1997.

Percentage shares

	1989						
		Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**	Tot Areas
Sectors*							
Text-appar	54%	8%	14%	78%	0%	0%	100%
Mec-Elect	26%	1%	73%	7%	18%	0%	100%
Transport	1%	27%	14%	39%	19%	0%	100%
Others	19%	2%	11%	73%	15%	0%	100%
Total Manuf	100%	4%	36%	49%	10%	0%	100%
	1997						
		Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**	Tot Areas
Sectors*							
Text-appar	48%	7%	5%	87%	0%	0%	100%
Mec-Elect	31%	1%	56%	33%	9%	0%	100%
Transport	7%	0%	1%	14%	85%	0%	100%
Others	14%	1%	11%	72%	17%	0%	100%
Total Manuf	100%	4%	24%	59%	13%	0%	100%

(*) Text-appar: 50-63; Mec-Elect: 84-85; Transport: 86-89; Total manuf: 28-99
(**) Selected countries

Source: Comext

Table 2-A

OPT flows/final flows ratio. Germany

(Imports+Exports, thousand of ECUs)

	1989					
	Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**
Sectors*						
Text-appar	17%	8%	4%	276%	0%	0%
Mec-Elect	2%	0%	9%	5%	2%	0%
Transport	0%	0%	0%	2%	0%	0%
Total 3	4%	2%	7%	41%	1%	0%
Total Manuf	2%	1%	4%	25%	1%	0%
	1997					
	Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**
Sectors*						
Text-appar	34%	26%	5%	172%	1%	3%
Mec-Elect	4%	1%	9%	9%	2%	0%
Transport	3%	0%	0%	2%	16%	0%
Total 3	8%	6%	7%	24%	5%	0%
Total Manuf	5%	4%	5%	15%	3%	0%

(*) Text-appar: 50-63; Mec-Elect: 84-85; Transport: 86-89; Total manuf: 28-99
(**) Selected countries

Source: Comext

Table 3-A

Germany shares of EU OPT flows

(Imports+Exports, thousand of ECUs)

	1989					
	Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**
Sectors*						
Text-appar	69%	15%	82%	68%	21%	5%
Mec-Elect	27%	11%	47%	67%	11%	2%
Transport	4%	44%	72%	12%	1%	0%
Others	42%	6%	54%	74%	16%	16%
Total Manuf	42%	14%	51%	68%	11%	2%
	1997					
	Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**
Sectors*						
Text-appar	57%	35%	53%	59%	26%	58%
Mec-Elect	36%	20%	44%	66%	16%	3%
Transport	37%	3%	38%	85%	45%	1%
Others	40%	9%	48%	60%	25%	2%
Total Manuf	45%	28%	44%	61%	28%	6%

(*) Text-appar: 50-63; Mec-Elect: 84-85; Transport: 86-89; Total manuf: 28-99
(**) Selected countries

Source: Comext

Italian tables

Table 4-A

Sectoral composition and geographical distribution of Italy OPT flows. 1989-1997.

Percentage shares

	1989						
		Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**	Tot Areas
Sectors*							
Text-appar	4%	7%	40%	53%	0%	0%	100%
Mec-Elect	56%	4%	67%	1%	27%	1%	100%
Transport	31%	4%	0%	0%	95%	1%	100%
Others	8%	5%	4%	10%	76%	4%	100%
Total Manuf	100%	4%	43%	5%	47%	1%	100%
	1997						
		Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**	Tot Areas
Sectors*							
Text-appar	43%	5%	4%	90%	0%	1%	100%
Mec-Elect	18%	5%	33%	10%	49%	3%	100%
Transport	12%	1%	1%	8%	87%	3%	100%
Others	27%	1%	5%	82%	9%	2%	100%
Total Manuf	100%	4%	10%	68%	17%	2%	100%

(*) Text-appar: 50-63; Mec-Elect: 84-85; Transport: 86-89; Total manuf: 28-99
(**) Selected countries

Source: Comext

Table 5-A

OPT flows/final flows ratio. Italy

(Imports+Exports, thousand of ECUs)

	1989					
		Areas				
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**
Sectors*						
Text-appar	1%	0%	1%	6%	0%	0%
Mec-Elect	3%	0%	5%	0%	1%	0%
Transport	7%	1%	0%	0%	8%	0%
Total 3	3%	1%	3%	2%	2%	0%
Total Manuf	1%	0%	2%	1%	1%	0%
	1997					
		Areas				
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**
Sectors*						
Text-appar	8%	3%	1%	75%	0%	1%
Mec-Elect	1%	1%	2%	1%	3%	0%
Transport	4%	0%	0%	1%	8%	0%
Total 3	4%	1%	1%	16%	3%	0%
Total Manuf	2%	1%	1%	12%	1%	0%

(*) Text-appar: 50-63; Mec-Elect: 84-85; Transport: 86-89; Total manuf: 28-99
(**) Selected countries

Table 6-A

Italy shares of EU OPT flows

(Imports+Exports, thousand of ECUs)

	1989					
	Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**
Sectors*						
Text-appar	1%	0%	6%	1%	5%	0%
Mec-Elect	14%	10%	9%	1%	4%	1%
Transport	43%	34%	13%	0%	27%	65%
Others	4%	2%	2%	1%	7%	17%
Total Manuf	10%	2%	9%	1%	7%	2%
	1997					
	Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**
Sectors*						
Text-appar	12%	5%	9%	14%	5%	36%
Mec-Elect	5%	8%	2%	2%	8%	6%
Transport	15%	5%	6%	6%	6%	24%
Others	18%	4%	7%	23%	5%	31%
Total Manuf	10%	5%	3%	13%	7%	12%

(*) Text-appar: 50-63; Mec-Elect: 84-85; Transport: 86-89; Total manuf: 28-99
(**) Selected countries

French tables

Table 7-A

Sectoral composition and geographical distribution of France OPT flows. 1989-1997.

Percentage shares

	1989						
	Areas						
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**	Tot Areas
Sectors*							
Text-appar	28%	73%	1%	26%	0%	0%	100%
Mec-Elect	37%	12%	27%	2%	35%	24%	100%
Transport	9%	1%	0%	1%	98%	0%	100%
Others	26%	42%	7%	16%	34%	1%	100%
Total Manuf	100%	36%	12%	12%	29%	10%	100%
	1997						
	Areas						
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**	Tot Areas
Sectors*							
Text-appar	20%	39%	1%	59%	0%	0%	100%
Mec-Elect	49%	7%	62%	6%	18%	7%	100%
Transport	14%	3%	1%	1%	93%	2%	100%
Others	17%	33%	9%	12%	46%	0%	100%
Total Manuf	100%	17%	37%	17%	25%	4%	100%

(*) Text-appar: 50-63; Mec-Elect: 84-85; Transport: 86-89; Total manuf: 28-99
(**) Selected countries

Source: Comext

Table 8-A

OPT flows/final flows ratio. France

(Imports+Exports, thousand of ECUs)

	1989					
	Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**
Sectors*						
Text-appar	8%	26%	1%	114%	0%	0%
Mec-Elect	3%	2%	5%	6%	4%	19%
Transport	2%	0%	0%	2%	8%	0%
Total 3	4%	7%	3%	37%	5%	12%
Total Manuf	2%	5%	2%	19%	3%	6%
	1997					
	Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**
Sectors*						
Text-appar	9%	10%	0%	114%	0%	0%
Mec-Elect	6%	4%	13%	6%	4%	9%
Transport	3%	0%	0%	0%	7%	1%
Total 3	6%	4%	10%	17%	5%	5%
Total Manuf	4%	4%	6%	10%	3%	3%

(*) Text-appar: 50-63; Mec-Elect: 84-85; Transport: 86-89; Total manuf: 28-99
(**) Selected countries

Source: Comext

Table 9-A

France shares of EU OPT flows

(Imports+Exports, thousand of ECUs)

	1989					
	Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**
Sectors*						
Text-appar	15%	62%	4%	10%	22%	17%
Mec-Elect	16%	77%	10%	12%	13%	88%
Transport	21%	12%	14%	2%	43%	14%
Others	24%	81%	18%	9%	20%	40%
Total Manuf	17%	66%	10%	10%	18%	84%
	1997					
	Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**
Sectors*						
Text-appar	8%	32%	2%	7%	3%	0%
Mec-Elect	20%	64%	25%	6%	16%	75%
Transport	25%	23%	16%	2%	18%	39%
Others	17%	81%	12%	3%	20%	3%
Total Manuf	15%	43%	22%	6%	18%	58%

(*) Text-appar: 50-63; Mec-Elect: 84-85; Transport: 86-89; Total manuf: 28-99
(**) Selected countries

Source: Comext

Dutch tables

Table 10-A

Sectoral composition and geographical distribution of Netherland OPT flows. 1989-1997.

Percentage shares

	1989						
		Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**	Tot Areas
Sectors*							
Text-appar	18%	35%	3%	61%	0%	0%	100%
Mec-Elect	74%	0%	20%	0%	78%	1%	100%
Transport	2%	0%	0%	1%	99%	0%	100%
Others	6%	3%	2%	11%	82%	3%	100%
Total Manuf	100%	4%	17%	8%	70%	1%	100%
	1997						
		Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**	Tot Areas
Sectors*							
Text-appar	30%	22%	2%	75%	2%	0%	100%
Mec-Elect	61%	1%	66%	4%	29%	1%	100%
Transport	2%	4%	5%	8%	69%	14%	100%
Others	7%	5%	11%	24%	48%	10%	100%
Total Manuf	100%	8%	41%	27%	23%	2%	100%

(*) Text-appar: 50-63; Mec-Elect: 84-85; Transport: 86-89; Total manuf: 28-99
(**) Selected countries

Source: Comext

Table 11-A

OPT flows/final flows ratio. Netherlands

(Imports+Exports, thousand of ECUs)

	1989					
		Areas				
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**
Sectors*						
Text-appar	15%	49%	1%	188%	0%	2%
Mec-Elect	15%	1%	20%	2%	43%	17%
Transport	1%	0%	0%	1%	2%	0%
Total 3	12%	14%	11%	52%	29%	11%
Total Manuf	6%	4%	6%	22%	15%	2%
	1997					
		Areas				
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**
Sectors*						
Text-appar	15%	26%	0%	119%	2%	0%
Mec-Elect	5%	1%	7%	3%	4%	2%
Transport	1%	1%	0%	1%	2%	4%
Total 3	6%	10%	5%	20%	3%	2%
Total Manuf	3%	5%	3%	10%	2%	1%

(*) Text-appar: 50-63; Mec-Elect: 84-85; Transport: 86-89; Total manuf: 28-99
(**) Selected countries

Source: Comext

Table 12-A

Netherlands shares of EU OPT flows

(Imports+Exports, thousand of ECUs)

	1989					
	Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**
Sectors*						
Text-appar	8%	9%	3%	8%	7%	22%
Mec-Elect	27%	1%	15%	3%	55%	9%
Transport	5%	0%	0%	0%	6%	0%
Others	4%	1%	2%	2%	14%	22%
Total Manuf	15%	7%	13%	6%	41%	10%
	1997					
	Areas					
	Extra-EU	Africa	Asia**	CEEC**	North Ame	South Ame**
Sectors*						
Text-appar	6%	11%	2%	5%	42%	0%
Mec-Elect	12%	3%	11%	2%	11%	4%
Transport	2%	3%	8%	2%	1%	33%
Others	3%	3%	4%	1%	5%	28%
Total Manuf	7%	8%	10%	4%	7%	9%

(*) Text-appar: 50-63; Mec-Elect: 84-85; Transport: 86-89; Total manuf: 28-99
(**) Selected countries

Source: Comext

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Redazione a cura di Gerardo Alfani

Depositato ai sensi di legge